

sequence of intercepted packets associated with a call, extracting a set of parameters from the sequence of intercepted packets, and generating an estimated mean opinion score in dependence upon the set of parameters. The extracting step comprises: (i) generating a jitter parameter for each packet of the sequence of stored packets; (ii) generating a long term average jitter parameter (lt_jitter) for the stored packet in dependence upon the value of the jitter parameter (jitter) for the stored packet, and the value of the jitter parameter for any preceding stored packets, and a predetermined adaptation rate (P) according to the equation: $lt_jitter = (lt_jitter * P) + (abs(jitter) * (1 - P))$; and (iii) generating a differential jitter parameter in dependence upon the jitter parameter for the stored packet and the long term average jitter parameter.

Claim 9 recites an apparatus for assessing speech quality transmitted via a packet based telecommunications network. The apparatus comprises, in relevant part, means for storing a sequence of intercepted packets associated with a call, means for extracting a set of parameters from the sequence of intercepted packets, and means for generating an estimated mean opinion score in dependence upon the set of parameters.

The means for extracting comprises: (i) means for generating a jitter parameter for each intercepted packet of the sequence of stored intercepted packets; (ii) means for generating a long term average jitter parameter (lt_jitter) for the stored packet in dependence upon the value of the jitter parameter (jitter) for the stored intercepted packet, and the value of the jitter parameter for any preceding stored intercepted packets and a predetermined adaptation rate (P) according to the equation: $lt_jitter = (lt_jitter * P) + (abs(jitter) * (1 - P))$; and (iii) means for generating a differential jitter

parameter in dependence upon the jitter parameter for the stored intercepted packet and the long term average jitter parameter.

The Examiner correctly asserts that Cisco fails to disclose the recited generation of a long term average jitter parameter, the recited generation of a differential jitter parameter, and the recited generation of a mean opinion score. For alleged disclosure of these features, the Examiner relies on a combination of Scott, Schulzrinne, and Bearden. Applicants respectfully traverse the present rejection on the grounds that there would have been no reason to combine the teachings of Scott and Schulzrinne with Cisco for the disclosure of generating a long term jitter parameter and a differential jitter parameter. Further, applicants respectfully submit that the combination of the references would have failed to disclose the present invention as a whole.

First, for the reasons explained below, the principle of operation taught by Cisco would have been changed significantly if the teachings of Scott and Schulzrinne were to be incorporated therein. MPEP 2143.01 (VI) states that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious (*In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)).

Cisco discloses a system and method for evaluating network performance (Cisco, Page 2) for the purpose of monitoring jitter, etc. that are elements of a contractual obligation (Cisco, Page 9). The system and method of Cisco monitors

jitter by measuring per-direction jitter, per-direction packet loss, and average round trip time between a Service Assurance Agent (SAA) and a SAA responder (Cisco, Page 64). To obtain the desired jitter report (Cisco, Pages 71-73) in relation to a synthetic VoIP call, the system sends a fixed number of packets (e.g. 1000), spaced at a known interval (e.g. 20ms), and a set frequency (e.g. 60) (Cisco, Page 70). The report created by the system and method of Cisco includes detailed specifics relating to the entire set (i.e. 1000 minus those lost) of packets sent between the SAA and the SAA responder. The report is a single document that can be used to confirm whether the network performance satisfies the Service Level Agreement (Cisco, Page 9). Because Cisco teaches that the measurements are to be taken based on a simulated VoIP call (Cisco, Page 70), Cisco teaches that the system is to be solely a synthetic sampling method, which uses “network traffic generated strictly for the purpose of measuring a network performance characteristic” (Cisco, Page 19). Cisco does not suggest that the system and method can or should be used to produce something other than a single final report on the specific network performance characteristic (i.e., jitter), the report including all of the data generated by the synthetic VoIP call.

Scott discloses a system and method for managing jitter buffering (Scott, Abstract). Scott teaches that the system and method includes a traffic analyzer that calculates an average jitter using a sliding window array (Scott, Column 5, lines 22-25). Scott teaches that the sliding window is to include a number of preceding jitter values where the last of the previously stored jitter values (i.e. $J[Ns]$) is removed when a new jitter value is saved, (Scott, Column 5, lines 33-36). Accordingly, Scott teaches

that an output (i.e. a new average jitter) is to be generated with each new jitter value. Therefore, the system and method of Scott do not generate a final report based on all of the data generated by a synthetic VoIP call. Instead, the continually updated average jitter derived from an actual call is used to make adjustments to a jitter buffer.

It should be noted that Scott specifically teaches the continually updating process is required for the proper functioning of a traffic analyzer, which is an essential component in managing a jitter buffer (Scott, Column 5, line 57 – Column 6, line 21). It is this continuing update, output and elimination of jitter data from the average jitter value, as taught by Scott, that would necessarily change the principle of operation of Cisco, and would be provide irrelevant data if it were to be somehow added as part of Cisco's final report.

Schulzrinne is used by the Examiner only for its alleged disclose of an alternate equation that allegedly could be used in place of the average jitter equation used in Scott. Schulzrinne would not have provided any reason why one skilled on the art would modify the principle of operation of Scott to provide a final report.

Referring now to the Examiners stated motivation to combine, the Examiner alleges, in lines 4-7 on page 6 of the Office Action, that "it would have been obvious to one having ordinary skill in the art to modify the invention of Cisco to explicitly include means for determining a long term average and differential jitter parameter of the extracted parameters, as taught by Scott and Schulzrinne, because, as suggested by Scott, the combination would have improved the speech quality analysis of Cisco by determining a more complete group of jitter parameters." In light of the above

descriptions of Cisco and Scott, it should be apparent that to add the continually updated average jitter parameter of Scott and Schulzrinne would necessarily change the principle of operation of Cisco to perform individual updates to values (including a average jitter value and a differential jitter value) for each additional jitter value added rather than providing a detailed final report resulting from a synthetic VoIP call.

Therefore, Applicants respectfully submit that the Examiner's combination of Cisco, Scott, Schulzrinne and Bearden is technically without merit, because to combine Scott and Schulzrinne with the method and system of Cisco would have necessarily changed the principle of operation of Cisco.

In addition to the forgoing, Applicants respectfully submit that the combination of Cisco, Scott, Schulzrinne, and Bearden would have failed to disclose the present application, as a whole. MPEP 2141.02 (I) explains that "in determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. MPEP 2141.02 (III) explains that "a patentable invention may line in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified.

The Examiner is respectfully requested to note that the inventors have found that the recited long term average jitter parameter and the differential jitter parameter are particularly important factors in determining and generating a mean opinion score relating to the voice quality of a VoIP call. Cisco, Scott, Schulzrinne and Bearden each fail to disclose any direct relationship between these elements and a mean

opinion score. Instead, Scott discloses that an average jitter value and a differential jitter value are to be used as part of a calculation to adjust the size of a jitter buffer. Scott does not disclose or suggest that the average jitter value and the differential jitter value can or should be used a rating from which a mean opinion score can be determined. Therefore the combination of Cisco, Scott, Schulzrinne, and Bearden would have failed to teach the method recited in claim 1 and the apparatus recited in claim 9, as a whole.

For at least the forgoing reasons, the method recited in claim 1 and the apparatus recited in claim 9 would not have been obvious to one skilled in the art provided with the disclosures of Cisco, Scott, Schulzrinne, and Bearden. Since claim 2 depends from claim 1, claim 2 is also believed to be allowable over the art of record. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.

2. Claims 3-5 were rejected under §103(a) over Cisco in view of Scott, Schulzrinne, and Bearden, and further in view of Carley. Carley is relied on in the Office Action for alleged disclosure of determining a variance value of the measured parameter and a subsequent average of the maximum and/or variance value. Thus, the disclosure in Carley relied on in the Office Action fails to overcome the deficiencies of Cisco, Scott, Schulzrinne, and Bearden as attempted to be applied to claim 1, from which claims 3-5 depend. Accordingly, reconsideration and withdrawal of the present rejection are respectfully requested.